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TITLE From Time Transfer by Laser Ranging to space geodetic products

ABSTRACT

Since June 2008, the Time Transfer by Laser Link (T2L2) experiment on-board the satellite Jason-2 provided many time transfer data from the current International Laser Ranging network managed by ILRS. The Full Rate laser ranging data from 25 to 32 stations in addition to the on-board recording of the one-way short laser shots provided the basic tools to establish the time synchronization between the ground reference clocks of the laser network. As a result of this wide expertise of the actual time & frequency statement of the network many systematic time biases were identified at a level of several hundreds of nanoseconds (ns) relative to UTC/TAI exceeding thus the current requirement of 100. In order to provide our community with time series of time biases being a priori values of some systematism affecting the integrity of laser ranging measurements to many targeted satellites including geodetics we digitized information over the 2008-2016 period.

We show here the result of this work and illustrate the behavior of some time & frequency systems on the long term that need to be included in many geodetic analysis involving laser ranging as the weekly geodetic products of ILRS Analysis Centers and the precise orbit determination of altimeter satellites like Jason and above all lower orbits as e.g. SARAL.